CLEANING LABORATORY EVALUATION SUMMARY

SCL #:	2015
DateRun:	06/17/2015
Experimenters:	Loc Nguyen, George Liang, Russell Curtis
ClientType:	Cleaner Manufacturer
ProjectNumber:	Project #1
Substrates:	Liquid
PartType:	Coupon
Contaminants:	Odor
Cleaning Methods:	Low Pressure Spray
Analytical Methods:	Smell
Purpose:	To evaluate supplied products for odor elimination

Experimental Procedure:

Clean 250 ml glass bottles were filled with six ml of whole milk. The bottles were capped and stored at room temperature for three days. At the end of the three days, the bottles were opened and observed for signs of spoiling odor.

Cleaning products were used at the recommended concentrations. Three bottles were opened and treated with two sprays of one of the supplied cleaning products. Bottles were capped and swirled to mix the cleaner with the milk.

A panel of three was initialized to the various odors of the untreated bottles. Then treated bottles were then presented uncapped to one member of the odor panel. The panelist was asked to describe odor and rank the level of intensity of the malodor. Each panelist was subjected to three bottles for each product/ milk mixture plus a selection of the initial odor bottles in random odor.

After the panelists observed the odors, bottles were recapped and allowed to set overnight. Bottles were reopened and assessed for odors. Each bottle was subjected to a second round of treatment and each panelist rated the malodor stench. The rating was according to the scale set being 1 as best and 5 being the worse. Each bottle was treated with 2 sprays (1 cycle of spray). The treatment of the contaminated bottles was stopped at a maximum of 6 sprays (3 cycles of sprays). At the end of the 3rd cycle of treatment, a cleaning agent is considered to be effective if the bottle has reached a malodor level that is under a 2. The bottles were then left overnight to sit to assess if any malodor level would rise. If it did, another round of treatment was applied to see if it can get rid of the malodor.

Chemistries Evaluated: BioMystic, BioMystic 5x, BioMystic Unscented, Febreze

Results:

Cleaner	BioMystic	Original		Average
Bottle 1	5	5	4	4.7
Bottle 2	5	4	4	4.3
Bottle 3	5	5	4	4.7
			% Average: 4.6	
Cleaner	BioMystic	Sprays: 2		Average
Bottle 1	3.5	3.5	4	3.7
Bottle 2	3	3	3	3
Bottle 3	2.5	3	3	2.8
			% Average: 3.2	
Cleaner	BioMystic	Sprays: 4		Average
Bottle 1	2	2.5	3	2.5
Bottle 2	3	2	3	2.7
Bottle 3	2	3	3	2.7
			% Average: 2.6	
Cleaner	BioMystic	Sprays: 6		Average
Bottle 1	2	2.5	3	2.5
Bottle 2	2.5	2	2.8	2.4
Bottle 3	2	2.5	2.5	2.3
			% Average: 2.4	
Cleaner	BioMystic 5x	Original		Average
Bottle 1	5	5	4	4.7
Bottle 2	5	5	4	4.7
Bottle 3	5	5	4.5	4.8

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			% Average: 4.7	
Cleaner	BioMystic 5x	Sprays: 2		Average
Bottle 1	3.5	3.5	4	3.7
Bottle 2	3	2.5	3.5	3
Bottle 3	3	3	3	3
			% Average: 3.2	
Cleaner	BioMystic 5x	Sprays: 4		Average
Bottle 1	3	3	3	3
Bottle 2	2	2.5	3.5	2.7
Bottle 3	2	2	2	2
			% Average: 2.6	
Cleaner	BioMystic 5x	Sprays: 6		Average
Bottle 1	1.5	2	1.5	1.7
Bottle 2	1.5	1.5	2.5	1.8
Bottle 3	1.5	2.5	1.5	1.8
			% Average: 1.8	
Cleaner	BioMystic Unscented	Original		Average
Bottle 1	5	5	5	5
Bottle 2	5	5	5	5
Bottle 3	5	5	4.5	4.8
			% Average: 4.9	
Cleaner	BioMystic Unscented	Sprays: 2		
Bottle 1	5	4.5	5	4.8
Bottle 2	5	5	4.5	4.8
Bottle 3	5	5	4.5	4.8
			% Average: 4.8	
Cleaner	BioMystic Unscented	Sprays: 4		
Bottle 1	3.2	4.5	3.8	3.8
Bottle 2	3.5	4	4	3.8
Bottle 3	4	4.5	4	4.2
			% Average: 3.9	
Cleaner	BioMystic Unscented Sprays: 6			Average
Bottle 1	3	4	3.5	3.5
Bottle 2	3	4	3	3.3
Bottle 3	3	4	3.5	3.5
			% Average: 3.4	
Cleaner	Febreze	Original	Average	Average
Bottle 1	5	4.5	4.5	4.7
Bottle 2	5	5	4	4.7
Bottle 3	5	4	4	4.3
			% Average: 4.6	
Cleaner	Febreze	Sprays: 2		Average
Bottle 1	1.5	1.5	1.5	1.5
Bottle 2	1.5	2	1.5	1.7
Bottle 3	1.5	2	1.5	1.7
			% Average: 1.6	
Cleaner	Febreze	Sprays: 4		Average
Bottle 1	1.5	1	1.5	1.3
Bottle 2	1.5	1.5	1.5	1.5
Bottle 3	1.5	2	1.5	1.7
			% Average: 1.5	
Cleaner	Febreze	Sprays: 6		Average

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Bottle 1	1	1	1	1
Bottle 2	1.5	1.5	1.5	1.5
Bottle 3	1.5	1.5	1.5	1.5
			% Average: 1.3	
Summary Table				
Cleaner	Sprays	% Average		
BioMystic	6	2.4		
BioMystic 5x	6	1.8		
BioMystic Unscented	6	3.4		
Febreze		6	1.3	
Cleaner	BioMystic	Overnight		Average
Bottle 1	5	3	4.5	4.2
Bottle 2	2.5	3.5	4	3.3
Bottle 3	2.5	3.5	4	3.3
			% Average: 3.6	
Cleaner	BioMystic	Sprays: 2 Overnight		Average
Bottle 1	2.5	2.5	2.5	2.5
Bottle 2	2	2	2.5	2.2
Bottle 3	2	2	3	2.3
			% Average: 2.3	
Cleaner	BioMystic 5x	Overnight	Average	Average
Bottle 1	3.5	1.5	3.5	2.8
Bottle 2	2.5	2	2.5	2.3
Bottle 3	2.5	2.5	2	2.3
			% Average: 2.5	
Cleaner	BioMystic 5x Sprays: 2 Overnight			Average
Bottle 1	2	1.5	1.5	1.7
Bottle 2	1.5	1.5	2	1.7
Bottle 3	1.5	1.5	1.5	1.5
			% Average: 1.6	
Cleaner	BioMystic Unscented	Overnight		Average
Bottle 1	4	4.5	5	4.5
Bottle 2	5	5	5	5
Bottle 3	4.5	5	4.5	4.7
			% Average: 4.7	
Cleaner	BioMystic Unscented Sprays: 2 Overnight			Average
Bottle 1	3.5	4.3	4	3.9
Bottle 2	4.5	4.5	5	4.7
Bottle 3	4.5	4.5	4	4.3
			% Average: 4.3	
Cleaner	Febreze	Overnight		Average
Bottle 1	1.5	1.5	1.5	1.5
Bottle 2	1.5	1.5	1	1.3
Bottle 3	1.5	1.5	1	1.3
			% Average: 1.4	

Summary Table

Cleaner	Overnight Avg.	After Spray

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BioMystic	3.6	2.3
BioMystic 5x	2.5	1.6
BioMystic Unscented	4.7	4.3
Febreze	1.4	N/A

Summary:

Substrates:	Liquid
Contaminants:	Odor

Company Name:	Product Name:	Conc.:	Efficiency:	Effective:	Observations:
Qwatro Corporation	BioMystic Odor Eliminator and Deep Cleaner (Scented)	100	0.00	☑	Partially Effective at removing malodor leve
Qwatro Corporation	BioMystic Odor Eliminator and Deep Cleaner (Unscented)	100	0.00	☐	Not Effective at removing malodor level
Procter & Gamble	Febreze Free Nature	100	0.00	☑	Effective at removing malodor level
Qwatro Corporation	BioMystic Biological Odour Eliminator & Deep Cleaner (5-X)	100	0.00	☑	Effective at removing malodor level

Conclusion:

A cleaner is considered effective once it has reached a malodor level under 2 within 3 cycles of treatment. Cleaning agents BioMystic 5x and Febreze were the most effective cleaning agents with respective ratings of 1.8 and 1.3 after the 3rd cycle. However, Febreze was able to remove the initial malodor level down to 1.6 after the 1st cycle. Whereas cleaning agent BioMystic is partially effective as it had a malodor level of 2.4 after its 3rd cycle. The unscented BioMystic cleaning agent was not effective at removing the malodor level.

After the overnight sit, cleaning agents: BioMystic, BioMystic 5x and BioMystic Unscented had an increase in malodor level greater than 2. Febreze treated bottles had only a slight marginal increase in malodor level from 1.3 to 1.4; that is an increase of 0.1 malodor level overnight. An addition spray was applied to the contaminated bottles that have a malodor level greater than 2 after the overnight sit to see whether or not the malodor rise from overnight can be eliminated. Cleaning agents: BioMystic and BioMystic 5x were able to eliminate the overnight rise in malodor level. However, bottles treated with BioMystic Unscented was not able to eliminate the overnight rise in malodor level.

Overall, the most effective cleaning agent is as follows: Febreze, BioMystic 5x and BioMystic. Cleaning agents BioMystic and BioMystic 5x is comparatively almost as effective as one another by the end of the 2nd cycle of treatment. At the end of the 2nd cycle, BioMystic and BioMystic 5x both had a malodor level of 2.6. However, by the end of the 3rd cycle of treatment, BioMystic 5x had a malodor level of 1.8 and bottles treated with the cleaning agent BioMystic had a malodor level of 2.4. There was only a slight increase in effectiveness for BioMystic. In addition to that BioMystic 5x had a more significant increase in elimination of malodor.